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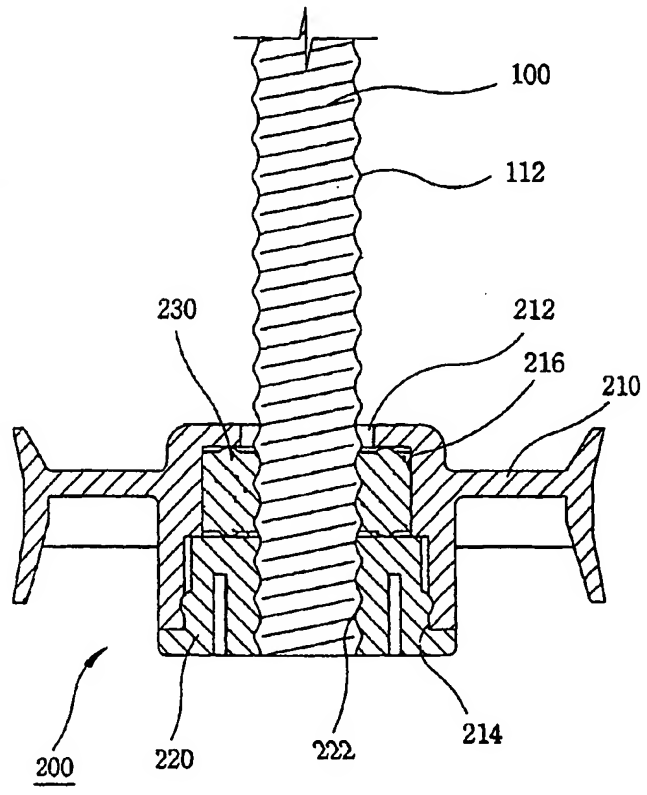
(54) Title: SEALING STRUCTURE OF AN UP-DOWN TYPE PISTON ASSEMBLY FOR EXHAUSTING A CONTENT



(57) Abstract: The present invention relates to the structure of the piston that is operated upward and downward by the revolving operation of the screw pillar for exhausting the liquid content that is contained to the inner portion of case. More particularly, it relates to a sealing structure of a piston assembly for exhausting the content, which can prevent that the content is in-flown and spilled into the inner portion of the piston by way of the screw of the screw pillar at removing and operating pf the piston. The present invention, which is comprised of, forming a piston and a screw cap for the piston assembly, and also intermediating a sealing washer having the elasticity between the piston and the screw cap to the piston assembly that is removed by way of the screw pillar for exhausting the content that is contained to the inner portion of case, which has such characteristics that even when the piston assembly is removed by way of the screw pillar at the exhaust of the content, it is possible to seal the chink that is generated between the screw pillar and the screw by the sealing washer and also to prevent that the content is spilled is provided.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SEALING STRUCTURE OF AN UP-DOWN TYPE PISTON ASSEMBLY FOR EXHAUSTING A CONTENT

BACKGROUND OF THE INVENTION

1.Field of the invention

The present invention relates to the structure of the piston that is operated upward and downward by the revolving operation of the screw pillar for exhausting the liquid content that is contained to the inner portion of case. More particularly, it relates to a sealing structure of an up-down piston assembly for exhausting the content, which can prevent that the content is in-flown and spilled into the inner portion of the piston by way of the screw of the screw pillar at removing and operating of the piston.

2. Description of the Prior Art

Generally, the present invention relates to the structure for exhausting the content as same as cosmetics, hairdye, etc. to the outside of case, and also the structure that is possible to exhaust the content to the outside of case is recently used because the piston is operated upward and downward to the inner portion of case by the screw pillar that is revolved and manipulated into one direction by the push operation of the exhaust device.

But, as exemplarily shown in Fig.1, in case of the prior art as such, it has such a structure that all of the piston (21) of the piston assembly (2) that is assembled to be possible to move mutually to the screw pillar (1) and the piston sealing assistant ring (22) are mutually assembled to the inside face with the screws (21a, 22a) that are corresponded to the screw (11) of the screw pillar (1), and also it has such a structure

that it is possible to generate the imperceptible chink between the screw (11) of the screw pillar (1), the piston (21) and the screws (21a, 22a) the piston sealing assistant ring (22) because the screw pillar (1), the piston (21) and the piston sealing assistant ring (22) must be light in view of the function.

Accordingly, it has such the problems that if the exhausting device (5) that is placed to the upside of case, so that the content (4) that is contained to the inner portion of case (3) is exhausted to the outside of case by using the structure as stated above, is operated, in the chink that is generated between the screws (21a, 22a) that are formed to the piston (21) that is removed by way of the screw (1) of the screw pillar (11) and the inside face of the piston sealing assistant ring (22), it brings the dissipation of the content (4), and also it is very difficult to operate for certainly exhausting the content because the content is spilled through the rear part of the piston (21) or the assembled chink of each of components as well as the arrow direction by the dwindling of the sealing ability, and also especially if the liquid content is more thin, these problems deepened.

SUMMARY OF THE INVENTION

It is an object for the present invention to provide the sealing structure of the piston assembly for exhausting the content, which can prevent that the content is spilled, or which can exhaust the total amount of contents by improving the sealing ability of the piston assembly that is removed by way of the screw pillar.

BRIEF DESCRIPTION OF THE DRAWINGS

The above object and advantages of the present invention will become more apparent by describing in detail preferred embodiments thereof with reference to the

attached drawings in which;

Fig.1 shows a portion cut side view of the cosmetic case showing an embodiment of the piston structure according to the present invention.

Fig.2 shows an extracted perspective view of the sealing washer according to the present invention.

Fig. 3 shows a sectional view showing the state before the piston is assembled to the screw pillar according to the present invention.

Fig.4 shows a sectional view showing the state after the piston is assembled to the screw pillar according to the present invention.

Fig.5 shows a side sectional view of one portion of the case showing an embodiment of the use of the piston according to the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention is established to solve the problem sated above. Also, it has such the characteristics that even though the screw pillar at exhausting of the content because the sealing washer that the elasticity has been entirely satisfactory is placed between the piston and the screw cap removes the piston assembly, the chink is not generated between the screw of screw pillar by the sealing washer and the spill of content can be prevented.

According to the present invention, it is desirable that the material of the sealing washer is NBR, and also it is desirable that the longitude of NBR is within the limits of 20~50 degrees.

Also, it is desirable to equip with the sealing projection frame to the sealing washer.

Hereinafter, referring now to the drawings the embodiments according to this

invention are described in detail.

Fig.2 is a portion cutting perspective view showing the structure of the sealing washer comprising of the piston assemble (200) according to the present invention and the rubber washer (230) is the cylinder type rubber and the sealing hole (232) is formed to the screw pillar (100) that it will be described later in its center, and the sealing projection frame is formed to the upward and downward portions of the outside face of the sealing hole (232) as one body.

If the sealing washer (230) is comprised of the material having a certain elasticity as the rubber, it can makes without the limitation but it is desirable that its material is NBR (Nitrile Butadiene Rubber) having a certain longitude, and in this case it is desirable that the longitude is 20~50 degrees. The reason why it has such a limitation that the longitude as the material of NBR is 20~50 degrees is because for example, if the longitude is below 20 degree, it is very thin and if the sealing washer (230) removes by way of the screw pillar (100), it has such the possibility that it takes or protrudes, and also if the longitude is over 50 degree, it is very hard and the sealing ability can be lowered.

Fig.3 is a sectional view showing each of components before the assemble of the piston assembly (200) at the screw pillar (100), the penetrating hole (212) that the diameter is bigger than the screw pillar (100) is formed to the piston (210) that is formed to the piston assembly (200), the first accommodating area (214) that the hard (such as plastic) screw cap (220) is connected to each other and the second accommodating area (216) that is put and placed by the sealing washer (230) are formed to the inside space of the portion that is not equipped with any components around the piston.

The screw hole (222) connecting with the screw (112) that is formed to the outside face of the screw pillar (100) is formed to the screw cap (220) that is connected to the first accommodating area (214).

And the sealing hole (232) of the sealing washer (230) can elastically be put to the screw pillar (100) at mutually assembling of them after it is formed as more small size than the diameter of the screw pillar (100).

Fig.4 is a sectional view showing the state that the piston assembly is connected to the screw pillar (100), the sealing washer (230) is pushed and put to the inner of the second accommodating area (216) after the screw pillar (100) is penetrated to the penetrating hole (212) of the piston and then the screw cap (220) that the screw hole (222) is connected to the screw of the screw pillar (100) is connected to the first accommodating area (214).

At this time, the sealing washer (230) that is put and placed to the second accommodating area (216) is closely clung to the inner portion of the second accommodating area (216) by connecting of the screw cap (220), and also the chink is sealed because the projection (234) is very strongly impacted to the first accommodating area (214) and the contacted face corresponding to the screw cap (220), and the space between the sealing hole (232) is closed because the sealing hole (232) of the sealing washer (230) is elastically impacted to the screw (112) of the screw pillar (100).

According to the present invention established as above, as shown in Figs. 5a and 5b, if the content is exhausted into the outside of the case (300) after the screw pillar (100) is removed to the center of case because if required, the piston assembly (200) is placed more than one or two to the inner portion of the case (300), the piston

(210) is removed by the screw cap (220) that the screw hole (222) is connected with the screw (112) of the screw pillar (100) and also the sealing washer (230) that is elastically placed between the piston (210) and the screw cap (220) is removed as such the state that the chink that is generated between the screws (112) of the screw pillar (100) is certainly sealed and even if the content is poured through the penetrating hole (212) of the piston (210), it can certainly prevent that the content is spilled to the chink that is generated between the piston (210) and the screw cap (220) because the inner portion of the piston assembly (200) is entirely sealed by the sealing washer (230).

Accordingly, if someone uses the piston assembly (200) that is made by the present invention, it can certainly prevent that the content is spilled to the rear portion of the piston (210) by the sealing washer (230) at exhausting the content (400) that is contained to the case (300), and even if the content is very thin, the content is safely and certainly exhausted.

Lastly, in the present invention as stated above, it has such an advantage that the exhausting of the content can be completely operated because it is possible to remove the piston assembly that is removed by the screw pillar as such a state that the chink that is generated between each of the components and between the screw of the screw pillar is certainly sealed, and also it is possible to completely exhaust the content by enhancing of the sealing ability thereby.

While the invention has been shown and described with reference to certain preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims

What is claimed is:

1. The sealing structure of a piston assembly for exhausting a content which is characterized that, even through at exhausting of the content (400) the piston assembly (200) is removed by the screw pillar, it is possible to seal the chink that is generated between the screw of the screw pillar (100) and to prevent the exhausting of the content because the sealing washer (230) having a good elastic power is formed between the piston (210) and the screw cap (220) that is formed to the piston assembly (200).

2. The sealing structure of a piston assembly for exhausting a content in claim 1, which is characterized that the sealing washer (230) is the material as same as NBR.

3. The sealing structure of a piston assembly for exhausting the content in claim 2, which is characterized that the longitude of NBR of the sealing washer (230) is 20~50 degree.

4. The sealing structure of an piston assembly for exhausting the content in claims 1 through 3, which is characterized that the sealing projection (234) is additionally formed to up and down of the outside of the screw hole (232) of the sealing washer (230).

FIG.1

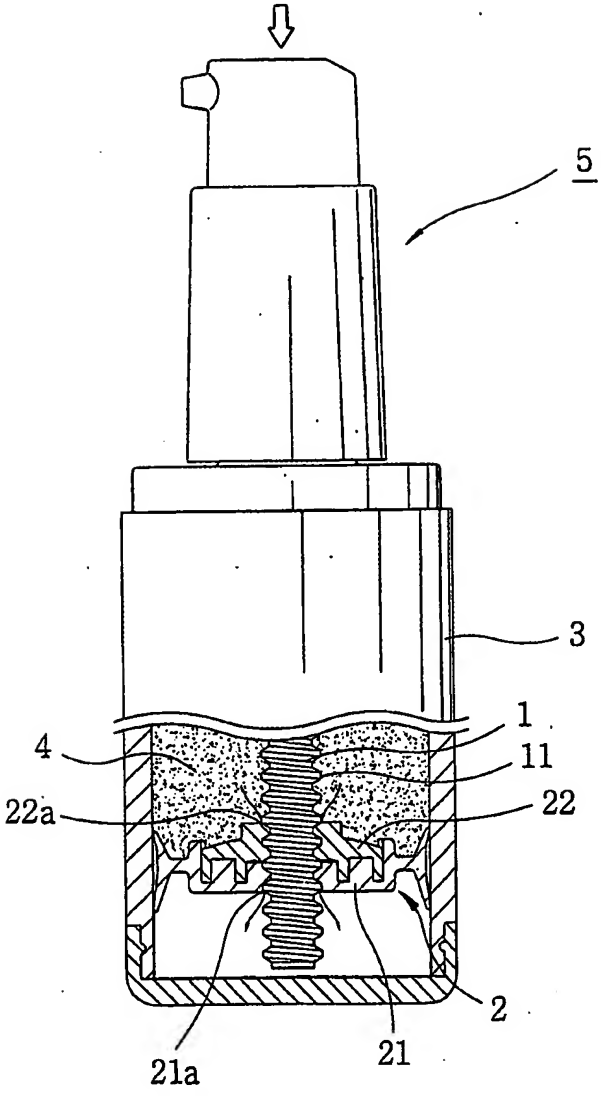


FIG.2

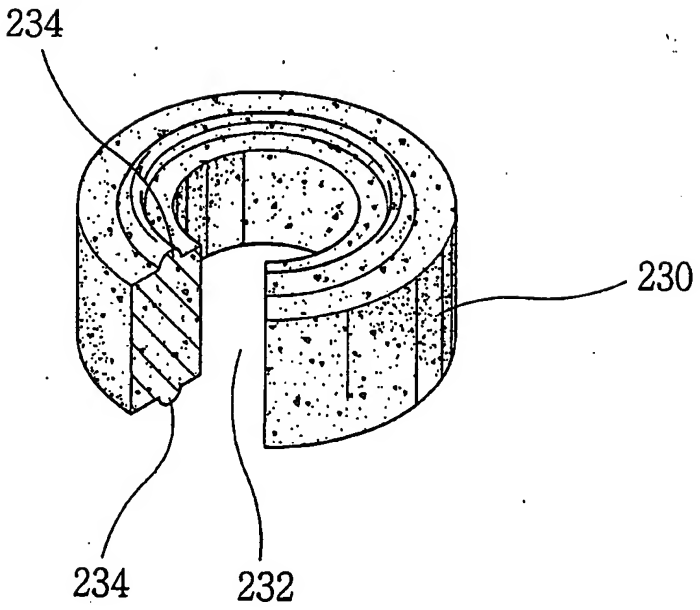


FIG.3

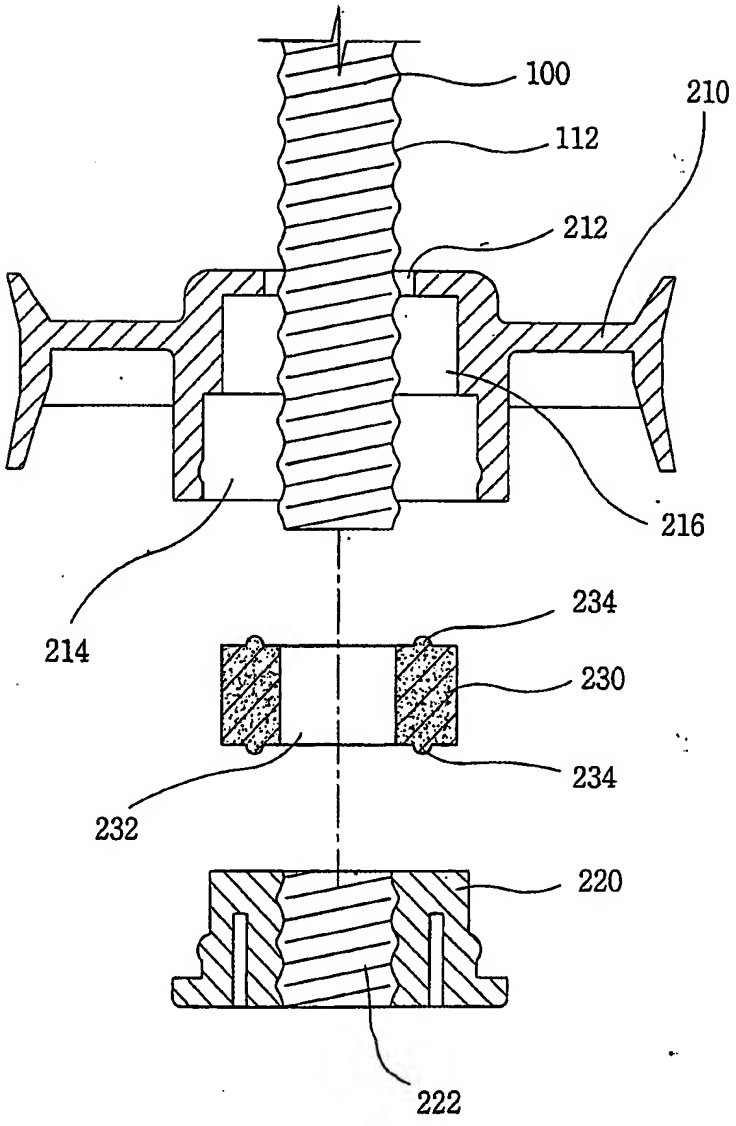


FIG.4

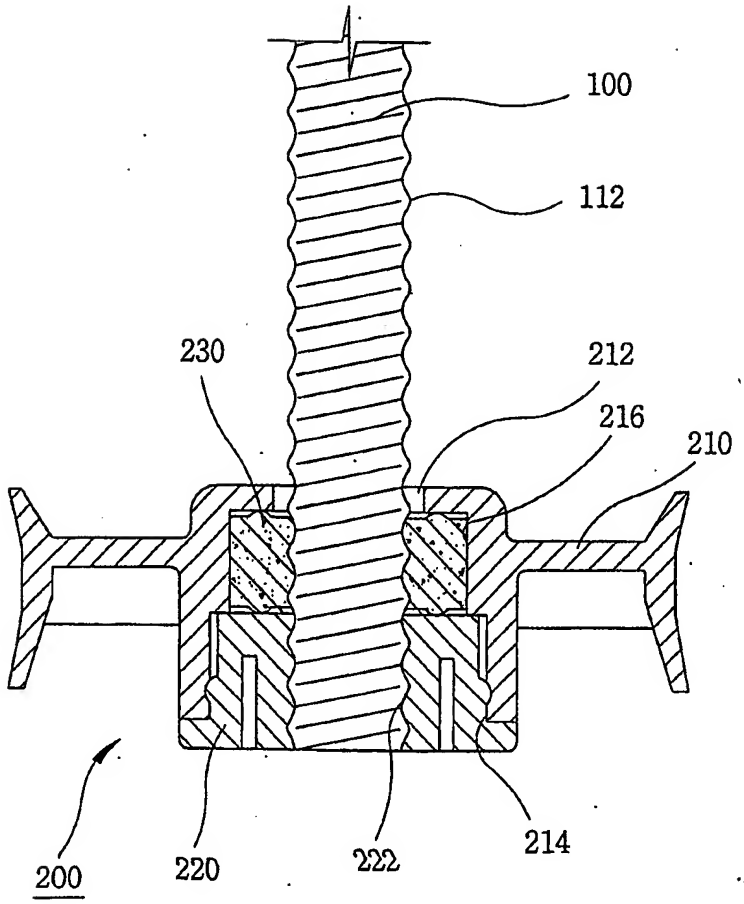


FIG.5

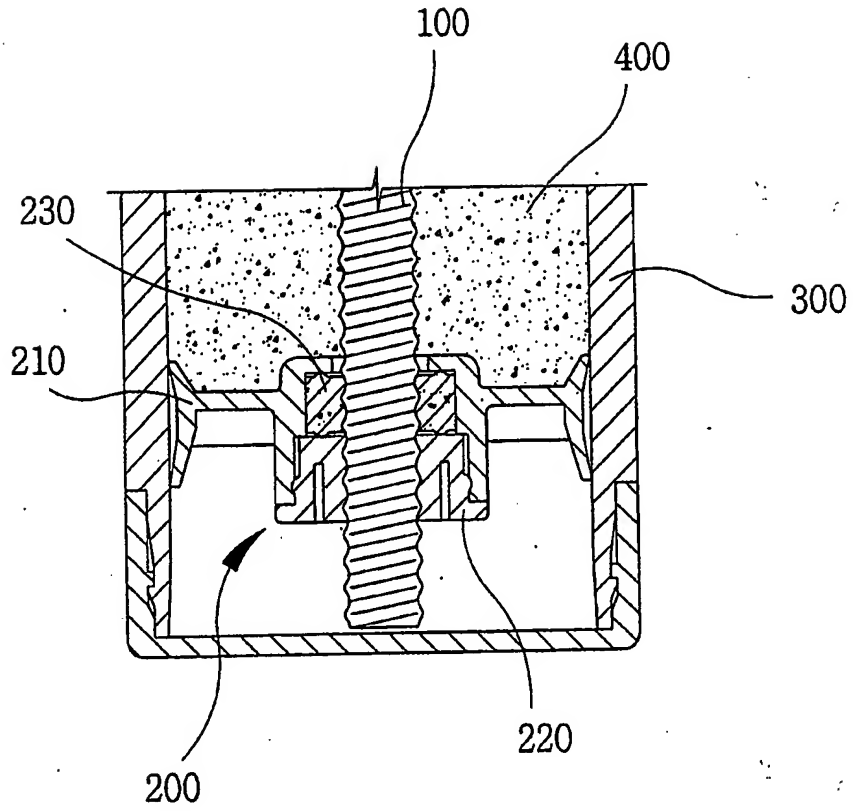
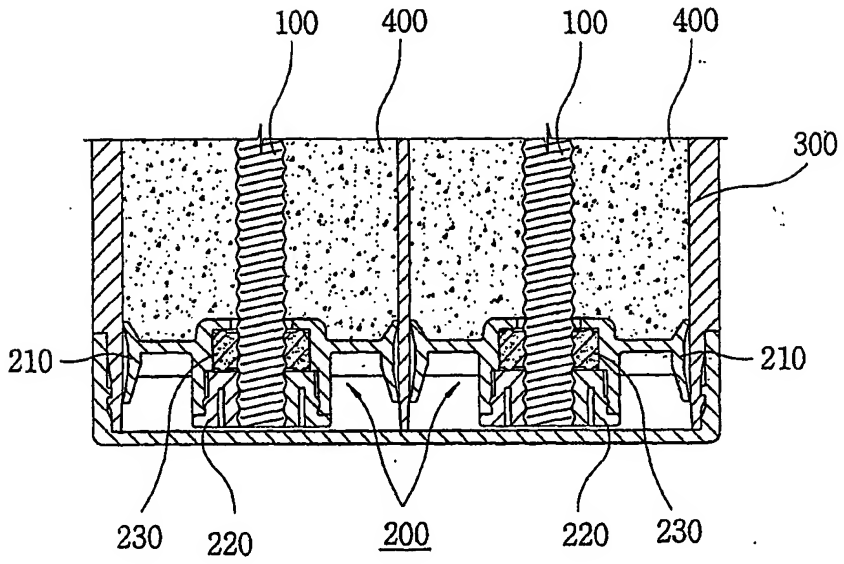


FIG.6



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR03/01990

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 A45D 34/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A45D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
KR: IPC as above
JP (utility models) : IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 02 067721 A1 (KANG, SEONG, IL) 6 SEPTEMBER 2002 See the whole document	1-4
A	US 5,636,931 A (L'OREAL) 10 JUNE 1997 See the whole document	1-4
A	JP 2000-309387 A (L'OREAL) 07 NOVEMBER 2000 See the whole document	1-4
A	KR 93-5398 Y1 (TAEPYONGYANG LTD) 16 AUGUST 1993 See the whole document	1-4
A	KR 1998-34351 U (KIM IN SIK) 15 SEPTEMBER 1998 See the whole document	1-4
A	KR 92-19010 U (LEE UN JAE, SHIN SAM SIK) 16 NOVEMBER 1992 See the shole document	1-4

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 DECEMBER 2003 (30.12.2003)	30 DECEMBER 2003 (30.12.2003)

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701,
Republic of Korea
Facsimile No. 82-42-472-7140

Authorized officer
SHIN, HOON SIK
Telephone No. 82-42-481-8166

Form PCT/ISA/210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT

International application No.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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KR 1998-34351 U	15-09-1998	NONE	
KR 92-19010 U	16-11-1992	NONE	

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Republic of Korea

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SHIN, HOON SIK

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JP 2000-309387 A	07-11-2000	US 6230762 BA EP 1038799 A1 FR 2791328 B1	15-05-2001 27-09-2000 01-06-2001
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